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Agricultural Engineering.

Agricultural Engineering publications, museums and exhibitions. Monthly Bulletin of Agricultural Science and Practice. v. 25, no. 1. January, 1934. p. 32-41. List of leading publications dealing with agricultural engineering, and of the principal museums and shows of agricultural engineering in various countries.

Agriculture.

Agricultural Adjustment. Washington, U. S. Government Printing Office, 1934. 393 p. Report of administration of the Agricultural Adjustment Act, May, 1933 to February, 1934.

Agricultural situation and outlook for Michigan, 1934. 1934. 26p. Michigan State College of Agriculture and Applied Science. Extension Division. Extension Bulletin no. 135.

Agriculture goes under the knife. By Ivan Hoyt. Hoard's Dairyman. v. 79, no. 1. January 10, 1934. p. 3, 22.

Chemistry in the progress of agriculture. By Dr. W. H. Tisdale. Better Farm Equipment and Methods. v. 6, nos. 7-8. April, 1934. p. 4-5, 12-16. Discoveries leading to knowledge of chemical elements of soil, water, and air, and part played by many of these elements in development and behavior of plant and animal life, have furnished foundation for applied chemistry in agriculture. With this fund of information at hand, progressive farmer has been able to understand his plants and animals, and treat them as living chemical laboratories with certain requirements of food, water and environment necessary for greatest production.

Computation of acreage under production control contracts. By S. P. Lyle. 1934. 14p. mimeographed. U. S. Agricultural Adjustment Administration. Commodities Division.

Economic trends affecting agriculture. By Louis H. Bean and Arthur P. Chew. 1933. 46p. U.S. Department of Agriculture.

Farm organization practices and costs of producing crops in the Middle Rio Grande conservancy district of New Mexico. By A. L. Walker and P. W. Cockerill. 1933. 71p. New Mexico. Agricultural Experiment Station Bulletin no. 215.

Forty-third annual report for the fiscal year ended June 30, 1933. 1934. 75p. Washington. Agricultural Experiment Station. Bulletin no. 291. Division of Agricultural Engineering, p. 10-11. Pacific Northwest soil erosion and moisture conservation experiment station, p. 59-64.

Agriculture. (Cont'd)

Future of farming. By L. R. Neel. Southern Agriculturist. v. 64, no.1. January, 1934. p. 4. Government aid and adjusted production. Land use. Farming for a living. Good farming essential. Labor-saving machinery important.

Machine base must govern any farm revamping plan. Implement and Tractor Trade Journal. v. 49, no. 6. March 24, 1934. p. 8, 17. How cost in production is essential to restoration of foreign trade. Low cost areas not to be arbitrarily abandoned.

Measurement of fields under production control contracts. By S.P. Lyle 1934. 9p. Mimeographed. U.S. Agricultural Adjustment Administration. Commodities Division.

Opportunity for chiseling. Implement and Tractor Trade Journal. v. 49, no. 6. March 24, 1934. p. 9, 16. Summer fallowing of withdrawn wheat land will make possible long needed breaking of subsoil hard pan to permit greater retention of moisture.

Place of field crop production in New Jersey. By Howard B. Sprague. 1934. 15p. New Jersey. Agricultural Experiment Station. Circular no. 294.

Summary of the A.A.A. program. Farm and Ranch. v. 53, no. 2. January 15, 1934. p. 3, 14.

Air Conditioning.

Air conditioning in its relation to human welfare. By C. A. Mills. Heating, Piping and Air Conditioning. v. 6, no. 4. April, 1934. p.175-179.

Automatic temperature control as applied to air conditioning. Part II. By R. B. Reagan. Aerologist. v. 10, no. 4. April, 1934. p. 19-22,30.

Principles of air conditioning for homes. By Baldwin M. Woods. Ice and Refrigeration. v. 86, no. 4. April, 1934. p. 269-271. Relation of heating and cooling of residences. Cost an important problem. Various methods used for comfort cooling of homes.

Proving home for air conditioning investigations. By Elliott Harrington and Leon A. Mears. Heating, Piping and Air Conditioning. v. 6, no.4. April, 1934. p. 185-192. Set-up to accomplish following four-fold objective: 1. Improvement of air conditioning apparatus, both in production and in development. 2. Improvement and simplification of installation and application standards. 3. Accumulation of additional data on benefits of air conditioning to comfort and health. 4. General public education on matters pertaining to air conditioning, through publishing of test reports and through public demonstrations. Description of climatic conditions. Apparatus for conditioning and measuring. Test results. Charts. Tabulations. Conclusions.

Alcohol.

Alcohol as a motor fuel: Editorial. Monthly Bulletin of Agricultural Science and Practice. v. 25, no. 1. January, 1934. p. 1-3. As a financial measure petrol importing countries have recognized that its use

Alcohol. (Cont'd)

has three advantages of reducing purchases of petrol abroad, increasing revenue through receipt of taxation on alcohol and benefitting agriculture at time of over-production, since alcohol is obtained from agricultural products containing sugar, starch or cellulose. In Germany petrol producers are required to purchase alcohol from State to extent of 10% of their production at 50 marks the hectolitre. It is possible to return alcohol which has not been mixed with petrol, but at loss of 42.5 marks per hectolitre. In Spain, one company has monopoly of petrol and is required to purchase alcohol at rate of 4% of petrol imported. In practice, company simply pays alcohol producers indemnity calculated on its receipts. In United States, there is no obligation for dealers to buy alcohol or to mix it with petrol. In France from 1923 onwards, petrol importers have been obliged to buy quantity of alcohol representing tenth part of their imports, to be mixed with petrol in equal parts, mixture going under name of "national carburant." In Hungary alcohol has to be added to all petrols with density of between 0.735 and 0.775. Alcohol is sold at a price equal to 9/10th of price of petrol. Loss is compensated by extra tax imposed on pure light quality petrol. In Italy, petrol importers are required to add alcohol at rate of 1 to 4. Purchase price of alcohol from State is 125 lire, and difference between this and real cost price (of about 245 lire) is made up by tax on the petrol. In Sweden, where no obligation is in force for mixing alcohol with petrol, carburant is sold under the name of "Lettbentyl" containing 75% of petrol and 25% of very cheap wood alcohol. In Czechoslovakia, all carburants must contain 20% of alcohol. Similar conditions are in force in Yugoslavia.

Alcohol blends as engine fuel. By R. B. Gray. v. 15, no. 3. March, 1934. p. 106-109. Agricultural Engineering.

Associations.

Iowa Engineering Society meets at Ames. Engineering News Record. v. 112, no. 13. March 29, 1934. p. 467-408. Reviews progress of P.W.A.,C. W. A and C.C.C., and discusses current technical investigations and studies.

Building Construction.

Correct proportioning of stair treads. By Ernest Irving Freese. American Architect. v. 143, no. 2618. July, 1933. p. 47.

Design simplification for eccentric rivet connections. By Abraham Frank. Engineering News-Record. v. 112, no. 12. March 22, 1934. p. 380-381. Moment of inertia and section modulus of rivet groups expressed in terms of pitch and number of rivets. Graphic method of determining rivet of maximum stress.

No cracks with new plaster board joint. By C. W. Utzman. American Builder. v. 56, no. 1. January, 1934. p. 40. Description of new Flexor joint system for applying plaster board.

Research work in impervious brick masonry. Canadian Engineer. v. 66, no. 4. January 23, 1934. p. 7-8. Recommendations for obtaining moisture-resisting reinforced and plain brick masonry based on an analysis of the results of numerous investigations.

Cold Storage.

Cold storage of potatoes. By Willis J. Williams. Ice and Refrigeration. v. 86, no. 4. April, 1934. p. 259-260. Discussion of results of experiments conducted with Australian potatoes. Loss of shrinkage in common

Cold Storage. (Cont'd)

storage. Effect of damage in harvesting or handling. Results indicate that potatoes can be cold stored with good results. Test made on seed stock. Note on American practice.

Conservation.

Enlarged water conservation program. By Leroy Anderson. California Cultivator. v. 81, no. 4. February 17, 1934. p. 67, 91. While other districts, notably in southern coastal area, have in recent years made substantial progress in their efforts to conserve winter run-off for irrigation purposes, group of interested citizens of Santa Clara Valley, realizing that only hope of maintaining their valuable agricultural acreage in profitable production, necessitated some action to conserve their rather limited water supply, began number of years ago, with limited funds possible at that time, construction of dams and spreading grounds to store as much as possible of annual run-off from adjoining mountains in underground stratas where it would replenish their fast failing pump supply of irrigation water. Success of these early efforts created greater interest in undertaking and each succeeding year they have been able to add to this work until now they have developed much larger program, which with aid of Federal funds, they hope to complete and thus save practically all of run-off what otherwise is largely wasted in San Francisco Bay.

Corrosion.

Weathering tests on metals and coatings reported by A.S.T.M. Engineering News-Record. v. 112, no. 12. March 22, 1934. p. 383-384. Reports on weathering tests which add to general fund of information on atmospheric corrosion of metals, qualified by statements as to caution to be exercised in interpreting any data on this type of test observation because of vagaries of subject, were presented in symposium at general session of regional meeting of American Society for Testing Materials in Washington, D.C. March 7. No attempt was made to coordinate data presented, purpose of program being to bring out unofficial progress reports that would be of immediate aid to materials engineers prior to subsequent studied conclusions and final committee action.

Cotton and Cotton Ginning.

Grade and staple length of cotton carried over in the United States as related to the domestic supply 1928-29 to 1931-32. By W. B. Lanham and O. T. Weaver. 1934. 23p. U.S. Department of Agriculture. Statistical bulletin no. 45.

Watt-hours cheaper than burrs as cotton gin power. By T. V. Grayson. Electrical World. v. 103, no. 11. March 17, 1934. p. 400-403. Ginning bale of cotton takes from 18 to 30 kw.-hr., average nearer 20, during eleven to fifteen minutes required for process, shorter time being more advantageous. Power consumption of fans can often be reduced merely by slowing them down, and this without detriment to functioning of gin. Zero-cost fuel in shape of burrs from "bollie" cotton, can frequently be hauled away at less cost than burning it for steam generation, electric power thus being cheaper in face of free fuel

Dams.

Containing the law relating to dams on dry watercourses and information relative thereto. 1933. 20p. Kansas State Board of Agriculture. Division of water resources. Report for the quarter ending December, 1933.

Dams. (Cont'd)

Roller-Gate dam erection at Rock Island, Ill. Engineering News-Record. v. 112, no. 13. March 29, 1934. p. 410-414. World's largest installation of roller gates signalizes first navigation dam completed for 9-ft. canalization of upper Mississippi River.

Three big dam operations begin in the Northwest. Engineering News-Record. v. 112, no. 14. April 5, 1934. p. 441. Review of conditions and initial construction operations at Bonneville and Grand Coulee on Columbia River and Fort Peck on Missouri River.

Drainage.

Drain the wet spots. By F. W. Taylor. New England Homestead. v. 107, no. 2. January 20, 1934. p. 10. Reasons for draining land: 1. That marshy or mucky lands may be rendered firm enough for farm operations. 2. That land may be made warmer by having excess water carried off underneath instead of being evaporated from surface. 3. That water may be drawn from ground and air admitted. 4. That plants may have more root room. 5. That amount of water available for plants is increased. Principal methods of draining wet lands: 1. Plowing it into "lands" or beds 20 to 40 feet wide, 2. by open ditches 2 or 3 feet deep with sloping sides, 3. by drain tile one foot long made of burned clay or cement.

Electric Power.

Electric power consumption in Nova Scotia. By Harold S. Johnston. Canadian Engineer. v. 66, no. 7. February 13, 1934. p. 8-9. Nova Scotia Power Commission reports increase in domestic load for household appliances and in rural districts.

Electrical power in the companionship of industry and agriculture. By W. R. Woolrich. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 102-105. Satisfactory farm electrification program requires: 1. Rate low enough to compete with existing light and power sources. 2. Added income for any extended use that will more than pay for increment of power used. 3. Equipment costs that are basically sound. 4. End of manufacturers' experimenting at expense of farmer. 5. Either cash purchasing or installment buying program than can be economically justified. Electric Home and Farm Authority.

Electric Service.

Census figures throw light on rate problem. Electrical World, v. 103, no.12. March 24, 1934. p. 444-446. Table gives number of consumers, current sold and revenue from electric service (ultimate consumers only) by class of service, commercial and municipal establishments: 1932.

Ten cents per outlet per week for Tennessee's unwired homes: Letter from W. A. Rhodes. Electrical World. v. 103, no. 10. March 10, 1934. p. 377. Problem is one of expansion into areas of lower grade than those usually considered profitable in supply of electricity.

Electricity in the Home.

87-Kw. "Home of tomorrow" points to higher energy use. Electrical World. v. 103, no. 13. March 31, 1934. p. 470-474. To anticipate 1950 home today calls for 87 kw. of connected electrical aids. It means usual month's energy use every day. That it requires 25 kva. of transformer capacity,

some 100-amp. circuit breakers, eight load centers and more than three miles of wiring is index enough of what it presages as impending market for kilowatt-hours, for distribution facilities, for wiring and wiring devices, for in-built appliance comfort and for long longed-for lighting.

Electricity on the Farm.

Electricity and agriculture. California Cultivator. v. 81, no. 4. February 17, 1934. p. 76-77. Projects to be studied during coming year include effect of light on insects, expansion of study already under way by Prof. W.B. Herms; soil heating project to be enlarged; soil sterilization; and different uses of soil heating cable.

Electricity for dairymen. New England Homestead. v. 107, no. 2. January 20, 1934. p. 11. Time and muscles are saved when wired power takes place of hand power.

Michigan electrification of farms progresses. Electrical World. v. 103, no. 12. March 24, 1934. p. 451. 38,633 electrified farms in Michigan at end of 1933, as compared with 8,218 reported by 1927 census of electrical industries, according to Utilities Information Bureau of Michigan.

Power for poultrymen. New England Homestead. v. 107, no. 3. February 3, 1934. p. 13, 17. Electricity can be applied in many helpful ways to lessen labor of flock care.

Present position of electro-farming in this country. By E. W. Golding. Rural Electrification and Electro-Farming. v. 9, no. 105. February, 1934. p. 274-276. (1) Hitler, in Germany, is settling 10,000 small farmers on land per year. In all cases holdings are electrified as first step. (2) In Czecho-Slovakia electricity has been generally adopted on farms, even small holdings of 10 acres being partially electrified. (3) More than 80 per cent of output of electric motors of A.S.E.A. firm in Sweden, and of Siemens-Schuckert in Germany, consists of motors for agricultural purposes. (4) In France, electrification has progressed sufficiently to cause considerable number of farms to specialize in manufacture of electrically driven farm implements.

Prospectus on rural electrification in the Tennessee River basin. By George W. Kable. 1933. 45p. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Rural electrification near London. Rural Electrification and Electro-Farming. v. 9, no. 105. February, 1934. p. 262-269. Value of electrical service in all sections of their work. Many examples of practical experience of electricity on farm, in home, and in poultry raising. How the supply company helps.

Engineering.

Engineers aid farmers in cutting crop costs. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 98. Summary of work of U. S. Department of Agriculture. Bureau of Agricultural Engineering.

Engineers as arbitrators of contracts. By Daniel T. Webster. Civil Engineering. v. 4, no. 4. April, 1934. p. 213-215. Knowledge of arbitration procedure necessary for settlement of disputes.

Erosion Control.

Alabama soil erosion project on the watershed of the Big Sandy Creek in Tallapoosa and Chambers Counties. 1934. 4p. mimeographed. U.S. Department of the Interior.

Cost of soil erosion. By H. H. Bennett. Utah Farmer. v. 54, no. 15. March 10, 1934. p.5. Synopsis of address delivered before American Association for the Advancement of Science.

How we stopped soil blowing. By Ivar Harebo. Montana Farmer. v. 21, no. 13. March 1, 1934. p. 3. Divided summer-fallow into 10-acre strips. This would make strips 10 rods wide on quarter section. Run strips north and south and alternate by having 10 acres of crop and 10 acres of fallow all through quarter. In this way you summer fallow 80 acres and crop 80 acres of every quarter each season. Our method of summer fallowing strips is to start in with cultivator as soon as we have our seeding done. We use narrow shovels at first and set them in deep so as to loosen up soil in order that it can take what rain may fall. Later, as weeds start, we put on wide shovels. In other words, we are doing practically all our summer fallowing by plowless system.

Ohio soil erosion project on the watershed of the Salt Creek Branch of the Muskingum River in Muskingum County. 1934. 6p. Mimeographed. U.S. Department of the Interior.

Protecting a water-works intake. By W. H. Vaughn. American City. v. 49, no. 1. January, 1934. p. 48. Riprap checks dangerous erosion.

Reconnaissance erosion survey of the Brazos river watershed, Texas. By H.V. Geib and Ira T. Goddard. 1934. 47p. U.S. Department of Agriculture. Miscellaneous Publication no. 186.

Root bed that resists erosion. By G. D. Jones. Farm Implement News. v. 55, no. 7. March 29, 1934. p. 20. Aerate soil to as great a depth as possible. Ripping should follow around contours or across slope, not with them, and should be every 24 to 30 inches apart and at depth of about 15 to 24 inches. Just before planting time, heavy duty or cover-crop disc should be used. Last operation is use of jostler to shake down finer or pulverized soil. With this type of soil structure, water run-off is reduced to minimum and water storage to maximum.

Scotch the dragon of erosion. By T. C. Richardson. Farm and Ranch. v. 52, no. 24. December 15, 1933. p. 1. Soil robbery by erosion twenty-one times as damaging as crop production. Half a billion tons of soil from American farms are dumped into sea every year by rivers. Most of it comes from cultivated areas - formerly most fertile and most favorable for cultivation. This is enough soil to cover 500,000 acres 7 inches deep - equal to county of 781 square miles area. Probably twice as much more is washed from the upland farms and deposited in river valleys. Terracing is now accepted as primary step toward stopping enormous soil losses which have become common to all farm lands except alluvial areas and some very level uplands. But since soil moisture is also vital factor in crop production in Southwest, often the limiting factor, it has been found advisable to terrace even land which is so level that little soil is lost, in order to retain rainfall until it goes into soil instead of running off. More than 6,000,000 acres on Texas farms have been terraced, and our neighboring States are doing proportionally well. United States Bureau of Agricultural Engineering has estimated that (based on increased crop yields) terracing has added $8.25 an acre to land value. Costs of terracing run from as low

Erosion Control. (Cont'd)

as $1.50 to $5 or $6 for ordinary jobs.

Worthwhile project. California Cultivator. v. 81, no. 5. March 3, 1934. p. 102. Description of Ventura project on soil erosion control.

Farm Buildings and Equipment.

Time saved and customers gained with a good milk house. By E. R. Jones and G. O. Hill. Successful Farming. v. 32, no. 4. April, 1934. p. 28, 56-57.

Farm Machinery and Equipment.

Greater efficiency of rotary tillage. By C. W. Kelsey. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 99-101. Gives basic principles and development.

Looking over the Case line. Farm Implement News. v. 55, no. 7. March 29, 1934. p. 12-13, 16.

Low cost power for the farmer. By E. A. Benfield. Implement Record. v. 31, no. 4. April, 1934. p. 7. Diagram for determining loss of value by depreciation.

Machinery for the fruit farmer and horticulturist. Implement and Machinery Review. v. 59, no. 707. March 1, 1934. p. 933-941. Instructive demonstration of small tractors, sprayers and other equipment.

New crust breaker. By D. J. Roach. Through the Leaves. v. 22, no. 2. March, 1934. p. 46-48. Advantages of Marlin crust breaker are as follows: 1. Ditcher marks are left undisturbed and none of the dirt from these marks is carried over on to beet row, consequently beets are not covered any deeper than originally planted. 2. Crust is broken without covering up leaves of small plants and in case of heavy rain immediately following crust breaking operation small beets are not muddied in. 3. Since ditcher marks are undisturbed protection from wind and driving sleet and rain which this ridge of dirt gives is kept throughout early period of beet growth. 4. This tool can be used in place of roller, immediately ahead of thinners, breaking crust around small beets and leaving soil mellow instead of packed hard as is case with roller. 5. It is possible by having two sets of these rolls to set them up so that crust on eight rows can be broken in one operation.

New deal in power farming is the Diesel. By Hobart Beresford. Implement Record. v. 31, no. 4. April, 1934. p. 8-10, 37.

New styles in farm machinery. By Carlyle Hodgkin. Nebraska Farmer. v. 76, no. 6. March 17, 1934. p. 8. Manufacturers introduce a variety of improvements.

When the industry was young. Better Farm Equipment and Methods. v. 6, nos. 7-8. April, 1934. p. 17. Mechanical drawing showing threshing machine construction of seventy years ago.

Farmhouses.

Rural housing survey. Building Material Digest. v. 3, no. 3. March, 1934. p. 2. One-tenth of all counties in all states except New York and

Farmhouses. (Cont'd)

Pennsylvania are being completely surveyed. Extension Department of State Agricultural Colleges are conducting this survey in attempt to focus attention on conditions in farm homes. Questions being asked farmers cover space requirements, conditions of water supply and sewage disposal, light and heat, refrigeration, laundry and cooking facilities. Chief improvements are classified in three price groups, $500.00, $300,00, and $100.00.

Fences.

The electrified fence. By F. C. Kingsley. Electricity on the Farm. v. 7, no. 4. April, 1934. p. 10, 18. Apparatus, known as Gengler electric fence, is equipped with sign flasher which is so arranged that fence is alternately charged at 110 volts and 55 volts at intervals of few seconds each. It is also equipped with current limiting resistance which limits current through animal to very small amount. Installation of equipment is simple, it being necessary only to fasten metal box to wall of building with four screws and plug cord into convenient outlet. Wire fence should be fastened to posts so as to avoid grounds. Wooden post or stake is sufficient as livestock will not lean on wire or push posts over. If metal posts are used block of wood should be wired to post and then wire stapled to it. Operating cost of electric fencer is very small for only 3 kilowatt-hours per month was used by apparatus. Advantages of this electric fencing equipment are: 1. Less wire required for fencing fields. 2. One wire may be used in place of heavy gate. 3. Saves time and labor. 4. Saves considerable investment in wire and gates. 5. Keeps livestock from reaching over fence to eat growing crops. 6. Reduces weeds along fence by virtue of livestock eating weeds under wire. 7. Avoids injury to livestock if run through wire fence as smooth wire may be used instead of barb wire. Disadvantages are: 1. All livestock are not turned away from fence. This was found true with small pigs. 2. Rainstorms tend to ground system. 3. Electricity may be off for short time, thus making equipment ineffective.

Fertilizers.

Rains create fertilizer problem. By H. F. Kenyon. California Cultivator. v. 81, no. 4. February 17, 1934. p. 71. Difficulties come about by virtue of fact that nitrates will leach out of our soils, especially sandy soils or even so-called sandy loams. Problem is not so serious on heavier soils unless they are subject to actual washing. Take it for granted that you will need extra nitrogen and apply it as emergency measure, or arrange with commercial soil chemist to determine just where you stand as to nitrate reserves, and then act accordingly.

Fire Protection.

Electrically set fires small part of Nation's loss. Electrical World. v. 103, no. 12. March 24, 1934. p. 443. According to compilation by actuarial bureau of National Board of Fire Underwriters, total recorded losses due to all causes in 1932 amounted to $320,687,643. It is customary to add 25 per cent to cover losses not reported to actuarial bureau, so that estimated total was about $400,000,000. Of reported loss $11,883,154, or 3.70 per cent, was attributed to electrical causes.

Flax.

Flax, a new cash grain crop for New Jersey. By Howard B. Sprague. 1934. 4p. New Jersey. Agricultural Experiment Station. Circular no. 295.

Flax. (Cont'd)

Growing flax in New Jersey. By Howard B. Sprague. 1934. 4p. New Jersey. Agricultural Experiment Station. Circular no. 305.

Flood and Flood Control.

Debris flow from canyons in Los Angeles County flood. By Colin A. Taylor. Engineering News-Record. v. 112, no. 14. April 5, 1934. p. 439-440. Character of detritus which caused most of damage in January flood. Denuding of canyon sides by fire provided areas for heavy erosion.

Lake-level control by submerged sills. By W. F. Peavey. Engineering News-Record. v. 112, no. 14. April 5, 1934. p. 437-438. Model studies confirm general plan and give design data for submerged sills in St. Clair River, to check flow and raise levels of Lakes Michigan and Huron.

Floors.

New joint and plywood floor panel tested. American Builder. v. 56, no. 1. January, 1934. p. 41. Tested at U. S. Forest Products Laboratory. Among possibilities indicated are substantial increase in speed of floor construction, considerable saving of materials, and distinct gain of head room in each story by use of new units, in which plywood sheets are glued to top and bottom of several joists.

Greenhouses.

Raising soil temperature in glasshouses. By W. F. Bewley. Journal of the Ministry of Agriculture. v. 40, no. 11. February, 1934. p. 1047-1056.

Heating.

Automatic control. American Architect. v. 143, no. 2619. September 1933. p. 104-115. Methods and refinements in automatic control to increase comfort, convenience and economy which should be understood before designing a heating installation or selecting equipment.

Automatic heating equipment. American Architect. v. 143, no. 2619. September, 1933. p. 95-103. Growing demand for heating plants that do not require manual attention for their daily operation is based upon four major considerations: (a) economy; (b) convenience, which means freedom from manual labor and frequent attention; (c) comfort, as evidenced by adequate and uniform heating; and (d) cleanliness through elimination of dust, ash and smoke. These four major factors vary in degree according to type of heating plant and nature of control equipment used. Hence, problem of architect specifying automatic heating installation is to appraise performance of each type of plant and its control possibilities in terms of results to be achieved.

Characteristics and advantages of convector heaters. Part 2. Heating and Ventilating. v. 31, no. 3. March, 1934. p. 26-27,32. Brief discussion of "heating effect" and other features of convectors, with illustrations of various convector grilles and available types of convectors.

Heating. (Cont'd)

Heating buildings with hot water. By Benjamin F. Burt and Samuel R. Lewis. Heating, Piping and Air Conditioning. v. 6, no. 4. April, 1934. p. 180-184.

Horses.

Number of horses on farms continued to decline. -- Number of cattle increases. Domestic Commerce. v. 13, no. 7. March 20, 1934. p. 78. Number of horses on farms was 11,942,000 head January 1, 1934, decrease of about 2 per cent during year, but number of colts under one year showed marked increase.

Hotbeds.

Preparation and management of hotbeds. By A. L. Wilson. Utah Farmer. v. 54, no. 15. March 10, 1934. p. 3. Arguments in favor of electricity as compared to manure are: 1. Heat is under control. 2. It is cleaner and easier to prepare and operate. 3. Manure burns out in 2 to 4 weeks whereas there is no limit to length of heating period with electricity. 4. Hotbed can be converted into cold frame by turning switch. 5. Electric heat is always available in emergencies.

Houses.

Another better homes contest. Building Material Digest. v. 3, no. 3. March, 1934. p. 14. $3,000 prize money is divided into four classes: projects involving less than $150; improvements from $150 to $500; from $500 to $1,000; and more than $1,000. Open to all families who will make their home more comfortable or convenient or will improve it architecturally.

Eight-room farm house. Montana Farmer. v. 21, no. 13. March 1, 1934. p. 10. Gives plan.

Home modernization program to be announced soon. Engineering News-Record. v. 112, no. 14, April 5, 1934. p. 456. Entire emphasis is put upon modernization of existing homes but it is understood that some new construction also will be financed. General reparation and remodeling of homes will result in expenditure of at least $1,000,000,000. No direct loans will be made and federal government's contribution to program will be comparatively small as plan preferred contemplates guarantee, in part, of loans made by private agencies such as banks, mortgage loan companies, insurance companies and building and loan associations. Theory of program is that idle capital can be mobilized if federal government offers some sort of guarantee on investment, and that unemployment aggravated by attenuation of CWA in new works divisions which employ only those actually in need, will be reduced.

Household kitchen planning. Prepared in collaboration with Good Housekeeping Institute. American Architect. v. 143, no. 2618. July, 1933. p. 91-100. Organization of equipment. Organization of work centers. Kitchens with pantries. Doors, windows and planning details. Size and capacity. Cooking equipment. Refrigerators. Sinks and dishwashers. Good preparation equipment. Incinerators. Cabinets and racks. Ventilating fans and hoods. Range wiring. General wiring layout. Plumbing connections.

New deal homes for Tennessee Valley project. By Earle S. Draper. American Builder. v. 56, no. 1. January, 1934. p. 20-21.

Houses. (Cont'd)

Up-to-date farm house. By Mr. A. S. Iler. Montana Farmer. v. 21, no. 13. March 1, 1934, p. 10.

Hydraulics.

River hydraulics in Czechoslovakia. By Donald P. Barnes. Civil Engineering. v. 4, no. 4. April, 1934. p. 193-196. National laboratories conduct model experiments for irrigation, flood control, and power structures.

Hydroelectric Power.

Grand Coulee development becomes federal project. Engineering News-Record. v. 112, no. 12. March 22, 1934. p. 395. Exclusively hydroelectric power development in initial stage. Originally this project was to have been state-controlled development subject to contract executed between state and United States covering arrangement for repayment costs through sale of power by state to new and existing agencies.

Waterwheel efficiency of hydroelectric units. By J. F. Richmond. Power Plant Engineering. v. 38, no. 4. April, 1934. p. 179. Novel method of increasing efficiency of hydraulic turbines by cleaning trash and leaves from blades of runners.

Income, Farm.

Gross farm income increased twelve hundred million dollars in 1933. Domestic Commerce. v. 13, no. 7. March 20, 1934. p. 78. Gross farm income in 1933 was about $6,383,000,000. 1932 gross income from production was $5,143,000,000. In 1931 it was $6,911,000,000, and in 1929 it was $11,918,000,000.

Insect Control.

Insect pest and plant disease control. By R. M. Merrill. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 109. Preliminary report for Committee on Insect Pest and Plant Disease Control (R.M. Merrill, chairman) of American Society of Agricultural Engineers, presented at a meeting of Power and Machinery Division, at Chicago, December, 1933.

Sell 'em insect insurance now. Implement and tractor Trade Journal. v. 49, no. 6. March 24, 1934. p. 10-11, 20. Some action views depicting coming campaign against plant pests are shown.

Irrigation.

Border effect in irrigated plots of Marquis wheat receiving water at different times. By D. W. Robertson and Dwight Koonce. Journal of Agricultural Research. v. 48, no. 2. January 15, 1934. p. 157-166.

Developing irrigation in Montana. By Clyde McKee and O. W. Munson. Montana Farmer. v. 21, no. 13. March 1, 1934. p. 17,27. Future development of irrigation farming will take three general directions, according to those who have given careful study to possibilities along this line in Montana, namely, (1) major irrigation projects; (2) Interspersed irrigation, and (3) flood or "high water" irrigation projects.

Irrigation. (Cont'd)

Formula for border strip irrigation. By R. D. Goodrich. Civil Engineering. v. 4, no. 4. April, 1934. p. 210-213. To give relation between time of application, length of strip, and soil permeability.

Irrigation of walnut orchards. By M. R. Huberty. California Cultivator. v. 81, no. 4. February 17, 1934. p. 69.

What irrigation means to Montana. By Clyde McKee and O. W. Munson. Montana Farmer. v. 21, no. 12. February 15, 1934. p. 9. Irrigation enterprises in Montana represent investment of over $50,000,000 according to Federal census of 1930. This amount has been spent to supply water to 2,276,000 acres of land included within various projects. Up to present time, however, only 1,594,912 acres of about 70 per cent of area for which enterprises are capable of supplying water actually have been irrigated. But irrigation of that land has added taxable value to State of $53,450,000, or more than entire amount expended in development.

Land.

Administration's land use policy. California Cultivator. v. 81, no. 4. February 17, 1934. p. 72.

Experiment in land use. Farm and Ranch. v. 52, no. 24. December 15, 1933. p. 9. National experiment in land use, devoted to studying prevention of soil erosion, and providing for removal from cultivation of submarginal land instead of average land required in crop production programs, is being undertaken cooperatively by Replacement Crops Section of Agricultural Adjustment Administration and Soil Erosion Service of Department of the Interior. It will cover 2,000,000 acres of land in ten different regions. Under cooperative program, in those areas where projects of Soil Erosion Service are located, farmers who reduce acreage under crop reduction programs of Agricultural Adjustment Administration, may substitute acres of submarginal land for average land that would be taken out of production under terms of their contracts. Under such an arrangement, a farmer whose contract would require him to remove 5 acres of average land from production would have privilege of removing instead 10 acres of submarginal land which was half as productive as his average land. Tentative locations of ten soil erosion prevention projects, already announced by Soil Erosion Service, are: 1. Upper Mississippi Valley, near LaCrosse, Wisconsin. 2. North Central Missouri and South Central Iowa, near Bethany, Missouri. 3. Central Illinois, in McLean County. 4. Central Texas, near Temple. 5. South Carolina Piedmont, near Spartanburg. 6. Pacific Northwest in Palouse section, near Pullman, Washington. 7. Oklahoma Red Plains, near Stillwater. 8. Tennessee Valley. 9 Kansas, near Mankato in Jewell county. 10. Large project including land in Arizona, New Mexico and Utah, known as Navajo project.

Wanted! One more efficiency. By A. E. Andrews. National Waltonian. v. 1, no. 7. January, 1934. p. 8-9. Streamside reforesting must be part of new land and forest policy.

Lubrication.

Types of lubricants. By Allen F. Brewer. Southern Power Journal. v. 52, no. 4. April, 1934. p. 35-38. 1. Straight mineral (petroleum oils.) 2. Compounded oils, i.e., straight mineral oils compounded with certain amount of fixed (animal or vegetable) oil, and 3. Greases, which are com

Lubrication. (Cont'd)

posed of certain soaps of sodium, lime or metallic base compounded with straight mineral oils of varying viscosity.

What oil shall I use? By J. Brownlee Davidson. Successful Farming. v. 32, no. 4. April, 1934. p. 58-59.

Miscellaneous.

How to design practical curved driveways. By Ernest Irving Freese. American Architect. v. 143, no. 2619. September, 1933. p. 33-38. Hard work is removed by diagrams and tables.

Leather tanning on farms. By M. K. Thornton, Jr. Farm and Ranch. v. 52, no. 24. December 15, 1933. p. 4. Tanning process. Removing the hair. Preservative agent. Time for tanning reduced.

Monumental reference work on geography. By Douglas Johnson. Science. v. 79, no. 2049. April 6, 1934. p. 305-311. Twenty-two volumes grouped under fifteen titles, projected by distinguished founder of French school of geography, Vidal de la Blache, and published under direction of scholarly authority on historical geography, Lucien Gallois, of University of Paris. Authoritative, up-to-date, condensed account of geological, geographical, climatic, botanical, zoological, economic and political aspects of different regions of world.

Trends in social science. By William Fielding Osburn. Science. v. 79, no. 2047. March 23, 1934. p. 257-262.

Use and care of the pressure cooker. 1934. 4p. Washington. State College. Extension Service. Extension Circular no. 21.

Motors.

Electric motor lubrication. Lubrication. v. 20, no. 3. March, 1934. p. 25-36. Protection against dust and wear.

Selecting motors for heating and air conditioning equipment. By L. Gwathmey and B. S. Weaver. Heating and Ventilating. v. 31, no. 3. March, 1934. p. 33-34. General application problem and discusses motor requirements for various applications.

To help you choose your A. C. motors. By A. A. Merrill. Factory Management and Maintenance. v. 91, no. 9. September, 1933. p. 358-360.

Pipes and Piping.

Review of piping standardization shows vast amount of work done. By Sabin Crocker. Industrial Standardization and Commercial Standards Monthly. v. 5, no. 3. March, 1934. p. 48-50.

Plows and Plowing.

Proper tillage important on Plains farm. By E. R. Parsons. Western Farm Life. v. 36, no. 2. February 15, 1934. p. 5, 10. Deep plowing and subsoiling require ample power and right equipment.

Poultry Houses and Equipment.

Equipment for chicks. By Cora Cooke. 1934. 11p. Minnesota University Agricultural Extension Division. Special Bulletin no. 163.

Three types of laying nests. Pacific Rural Press. v. 127, no. 5. February 3, 1934. p. 96-97. 1. Dark laying room and broody coop. 2. Open front nests. 3. Dark nest.

Public Works.

Harnessing the Winding Old Pecos. By S. M. Johnston. Farm and Ranch. v. 53, no. 2. January 15, 1934. p. 2, 14. Irrigation tax. Total cost of undertaking is figures at $2,600,000 of which $780,000 will be government grant and will not have to be repaid. It is expected that water impounded by dam will bring about 90,000 acres of land under cultivation.

To improve Uncompahgre. Western Farm Life. v. 36, no. 1. January, 1934. p. 13. Made possible by allotment of $2,725,000 by public works administration. It is estimated that this will provide 13,000 man-months of employment. Plans call for construction of two-million dollar Taylor Park reservoir, $400,000 for lining Gunnison tunnel, and $325,000 for repair of South canal. New reservoir will be for development of power and additional irrigation water supply. It is not planned to increase area under irrigation, but to supplement and stabilize water supply at present in irrigated region of Uncompahgre Valley.

Types of work for new urban-works program outlined. Engineering News Record. v. 112, no. 13. March 29, 1934. p. 424. Employment of needy persons would be distributed as follows: 3 per cent planning projects, 30 per cent public improvements, 15 per cent demolition and housing, 15 per cent production of goods needed by unemployed, 7 per cent public welfare, health and recreation service and 10 per cent education, arts and research. 20 per cent reserve may be distributed among any of these fields as conditions warrant.

Pumps and Pumping.

Factors affecting cost of operating natural gas and Diesel-type engines for driving irrigation pumps. By B. D. Moses and C. V. Givan. Implement Record. v. 31, no. 4. April, 1934. p. 12-14. Conclusions based principally upon data acquired on field trip between August 31 and October 3, 1932. Thirty-seven pumping plants owned by individual farmers were visited. Nineteen used natural-gas engines and 18 used oil engines. In addition, some information concerning engine-driven plants owned by five water companies was obtained.

Modern practice in control of pumps and fans. By Kenneth R. D. Wolfe. Southern Power Journal. v. 52, no. 4. April, 1934. p. 22-25.

Propeller pumps in parallel. By C. B. Tuley. Power. v. 78, no. 4. April, 1934. p. 187. Five ways to start them without overloading driving motors.

Refrigeration.

Cutting costs in cooling milk. By James W. Irwin. Electricity on the Farm. v. 7, no. 4. April, 1934. p. 7-9. Next ten years will see still further development in American farm life. Power lines will be extended still

Refrigeration. (Cont'd)

further into country as power companies sense growing use of power on the farm. Within next few years use of mechanical refrigeration will increase remarkably for farmer is finding out that he must make use of machinery and modern inventions. Science has harnessed many of forces of nature for his use, and successful farmer will use them.

Research.

Research more needed now than ever: Editorial. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 110. It is in times of stress like present that results of research are especially needed. To succeed, farmers and ranchers must raise quality products cheaper than their competitors, and we must all learn more about economics of present-day social relationships. Only research of high order can solve these problems. Necessity for adjustment and readjustment to meet rapidly changing economic and social conditions in agriculture is becoming daily more apparent. Rational development and use of machinery to meet requirements of adjusted cropping practices economically is one of most important fields in which agricultural engineer may develop his research tendencies at this time. Great program of adjusted and controlled land use is one in which special training of engineer is particularly valuable at this time, provided he exercises such foresight and judgment as will contribute to economic utility of all lands.

Retaining walls.

Large retaining-wall tests. IV. Effect of capillary forces in partly saturated fill. By Karl Terzaghi. Engineering News-Record. v. 112, no. 13. March 29, 1934. p. 403-406. Analysis of capillary forces as they complicate pressure phenomena and affect results of tests on drained backfill of fine material.

Sewage and Sewage Disposal.

Ohio conference on sewage treatment. Annual report, 1932. Columbus Department of Health, 1934. 67p.

Saddle-back bins on tractor handle dried sewage sludge. By W. B. Walraven. Engineering News-Record. v. 112, no. 12. March 22, 1934. p. 379. Springfield, Illinois, finds flexibility and low unit weight of crawler machines advantage over fixed tracts.

Silos.

Concrete stave silo. By Dalton G. Miller and Philip W. Manson. 1934. 4p. Minnesota. Agricultural Extension Division. Circular no. 44.

This trench silo worked well. By E. F. Lyman. Montana Farmer. v. 21, no. 13. March 1, 1934. p. 3, 16.

Trench silos. By M. R. Bentley. 1934. 15p. Texas. Agricultural and Mechanical College. Extension College. Bulletin no. 84.

Standardization.

Roper outlines Bureau of Standards and ASA program of cooperation. Industrial Standardization and Commercial Standards Monthly. v. 5, no. 3.

Standardization. (Cont'd)

March, 1934. p. 45-46. Gives temporary plan of cooperation between American Standards Association and Bureau of Standards in simplification and commercial standardization work.

Storage Houses.

Insulated common storage for apples. By E. R. Gross, 1934. 4 p. New Jersey Agricultural Experiment Station. Circular no. 301.

Tennessee Valley Authority.

South welcomes the T.A.V. Electrical World. v. 103, no. 10. March 10, 1934. p. 368-370. Impressions of Tennessee Valley Authority, its work, its reception and its personnel.

Tires.

"O-K" steam for air tires. Implement and Tractor Trade Journal. v. 49, no. 6. March 24, 1934. p. 12-13, 22. Tests conducted in fourteen states develop uniform conclusions, attesting fuel economy, greater speeds and reductions in rolling resistance.

Rubber meets traction needs of listed ridges. Implement and Tractor Trade Journal. v. 49, no. 7. April 7, 1934. p. 10, 24. New wheel equipment meets varied requirements of middle-busting and cultivating with same advantages which have been shown in other farming operations.

Tractors.

Field requirements of garden tractors. A. A. Stone. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 91-96. Important plow requirements: 1. It must possess more stability within itself so that it does not affect steering of tractor. 2. Connections between plow and tractor must be such that slight slipping or swerving of tractor does not immediately affect set of plow. 3. Better provision for depth adjustments and horizontal or width of furrow adjustments may be possible. 4. Plow-lifting devices or levers should be improved. 5. Combination coulter and jointer should be furnished as standard equipment.

Garden tractor in Michigan. By E. C. Sauve. Agricultural Engineering. v. 15, no. 3. March, 1934. p. 97-98. Following points should be given special consideration: 1. Is tractor reasonable priced? 2. Is manufacturer a reputable and going concern? 3. Does tractor under consideration have too little or too much capacity to meet power needs? 4. Do wheels or traction mechanism provide ample traction for particular soil on which tractor is to be used? 5. Does tractor provide ample adjustment of wheel spacing and arch clearance for cultivation requirements? 6. Does tractor provide for reasonably quick adjustments of cultivator shovels? 7. Are tractor wearing parts sufficiently protected from dust? 8. Are tractor controls accessible to operator? 9. Will tractor turn at end of rows with little manual effort? 10. Can manufacturer provide reasonably quick service on repairs? Tractor advantages: (1) Operation costs are low; (2) small tractor works well in narrow as well as wide row crops; (3) tractor does not eat when not in use; (4) does work quicker and better than with horse; (5) no care when not working; (6) easily stored when not in use, and (7) quickly made available for work. Tractor disadvantages: (1) Small tractors do poor job of plowing; (2) price too high; (3) too cumbersome to

Tractors. (Cont'd)

handle; (4) poor repair service offered by manufacturers, and (5) not enough traction in sandy soils. Horse advantages: (1) Low cost if horse can be used for other work; (2) satisfactory in medium and wide-row crops, and (3) no traction difficulties. Horse disadvantages: (1) Horse consumes profits during idle months; (2) tramples crops planted in narrow rows, and (3) horse care in off season objectionable.

Trailers.

How I built my trailer. By Gerald Davison. Hoard's Dairyman. v. 79, no. 2. January 25, 1934. p. 28. Gives bill of material and approximate cost.

Ventilation.

Attic ventilation. By G. B. Helmrich and G. H. Tuttle. Domestic Engineering. v. 143, no. 3. March, 1934. p. 75-79. How comfort cooling is brought about by use of exhaust fans installed to remove hot air from upper parts of homes in summer weather.

Water, Underground.

Ground-water survey in Ohio. Water Works and Sewerage. v. 81, no.1. March, 1934. p. 77. Ground-water survey of Ohio is in progress as project of Civil Works Administration. It is being directed by Geological Survey of Ohio. Objects of survey are: 1. To determine level of ground-water table and changes that may have occurred in recent time. 2. To determine thickness of glacial drift and water-bearing horizons therein. 3. To determine contour of rock floor. 4. To determine water-bearing horizons in bed rock.

Water Heating.

Electric water heaters for the farmer's wife. Rural Electrification and Electro-Farming. v. 9, no. 105. February, 1934. p. 277-281. Interesting information of practical use to farmer's household, giving running costs and some details of different types now available.

Water Systems.

Water systems that give little trouble in operation. By E. W. Lehmann. Electricity on the Farm. v. 7, no. 4. April, 1934. p. 4-6.

Windmills.

Homemade wind electric plant. Montana Farmer. v. 21, no. 11. February 1, 1934. p. 10. Air motor may be built from parts salvaged from old binders and cars. Propeller is made from two five foot long two by sixes. V pulleys and V. belt may be obtained from junked cars.

Wind power electric plants. By J. Ronness. 1934. 1p. Minnesota. University. Agricultural Extension Division. Agricultural Engineering News Letter. no. 23.

Wood.

Growing wood as a crop on New York farms. By J. A. Cope. 1933. 38p. Cornell University. Extension Service. Bulletin no. 270.

Wood Preservation.

Preservation of wooden poles. By C. E. Schwenger and F. X. Brady. Bulletin. (Hydro Electric Power Commission of Ontario) v. 21, no. 1. January, 1934. p. 5-20. Involves study of causes of wood decay and choice of preservatives available for prevention of this decay.

Protection on job reduces lumber shrinkage. Building Material Digest. v. 3, no. 2. February, 1934. p. 12. Period of storage in recent tests was purposely lengthened far beyond time that material would stand waiting on average job, and by best methods of piling and covering that were tried average moisture content was effectively held below 16 and 18 per cent for joists and shiplap, respectively, up to 450 days in pile. Unprotected lumber registered averages above 32 per cent moisture content in same time. Materials and practices were kept down to scale that might be economical on small or medium-sized contract.

Weathering of creosote. By H. E. Gillander, C. G. King, E. O. Rhodes and J. N. Roche. Industrial and Engineering Chemistry. v. 26, no. 2. February, 1934. p. 175-183. Machine is described in which small sap wood blocks evenly impregnated with creosote are exposed to continuous weathering cycles to allow effects of weathering to be aggregate. Course of weathering is followed by removing certain number of blocks at stated intervals and determining (1) their resistance to direct attack by fungi, (2) percentage loss of oil, (3) toxicity of extracted oil, and (4) distillation range of extracted oil. Data are given to show degree of weathering brought about by machine and effect of various cycles. Toxicity-permanence interrelationships are developed, and probable mechanics of weathering of oil in treated wood discussed.